**CS21003 ALGORITHMS-1**
**(WorkSheet 4 Solutions)**
**Date: Oct 3 2020**

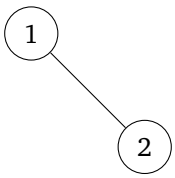
# 1 Draw the AVL Trees

## 1.1 Only ODD Roll Numbered Students must attempt this

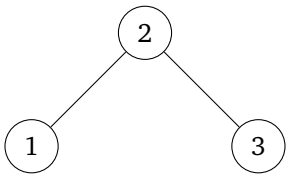
Solution -
Elements: $\{1, 2, 3, 4, 5, 6, 7\}$
Tree T: Intially Empty

Insert 1:

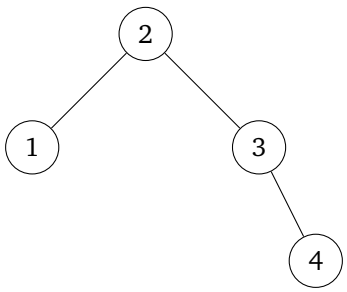

Insert 2:



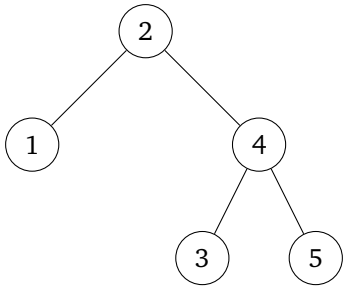

Insert 3:



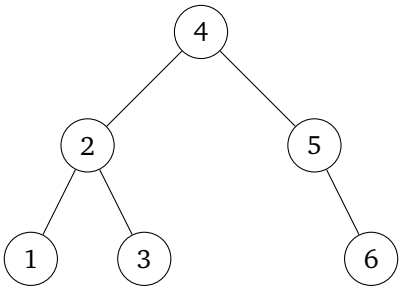

Insert 4:



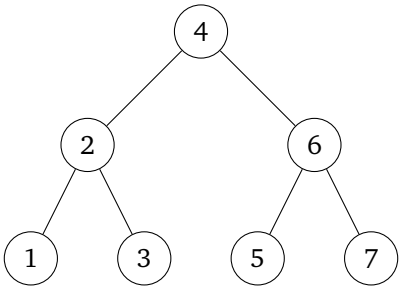

Insert 5:



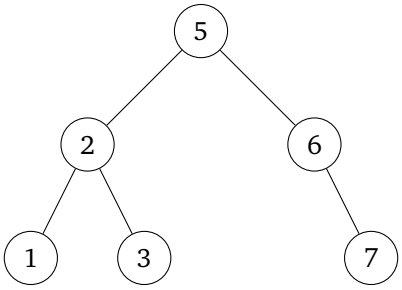

Insert 6:




Insert 7:




Delete 4:



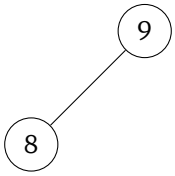

**Inorder Traversal:**
$\{1, 2, 3, 5, 6, 7\}$
**Preorder Traversal:**
$\{5, 2, 1, 3, 6, 7\}$
**Postorder Traversal:**
$\{1, 3, 2, 7, 6, 5\}$

## 1.2 Only EVEN Roll Numbered Students must attempt this

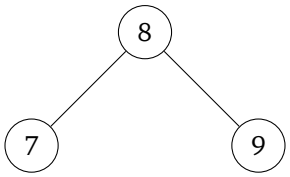
Solution -
Elements: $\{9, 8, 7, 6, 5, 4, 3\}$
Tree T: Intially Empty

Insert 9:

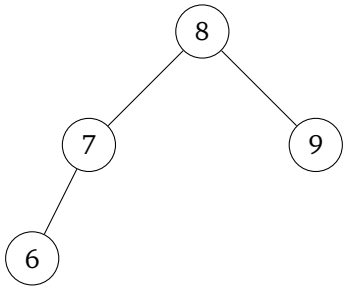

Insert 8:



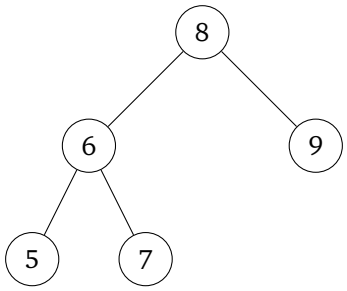

Insert 7:



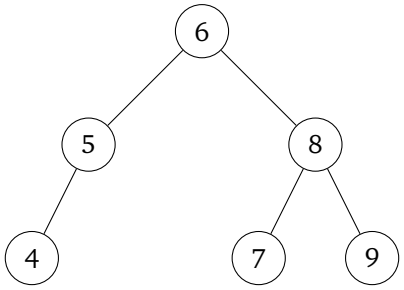

Insert 6:



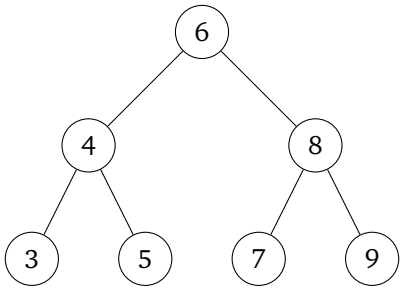

Insert 5:



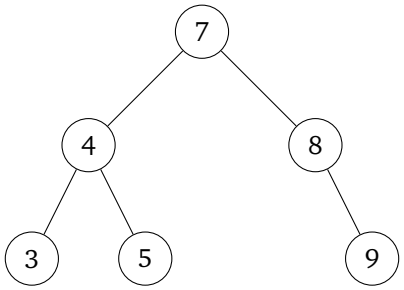

Insert 4:




Insert 3:




Delete 6:




**Inorder Traversal:**
$\{3, 4, 5, 7, 8, 9\}$
**Preorder Traversal:**
$\{7, 4, 3, 5, 8, 9\}$
**Postorder Traversal:**
$\{3, 5, 4, 9, 8, 7\}$